



# ***Earned Value***

## **Defense Acquisition Reform and Project Management**

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(Acquisition & Technology)***

# **DoD Acquisition Reform**

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- ◆ **The acquisition environment**
  - Industrial base consolidation
- ◆ **Earned Value “Reengineered”**
  - From C/SCSC to Earned Value Management Systems (EVMS) Criteria
- ◆ **Integrated Project Management**



**EVM Web Site -  
[www.acq.osd.mil/pm](http://www.acq.osd.mil/pm)**

# **DoD Acquisition Reform**

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- ◆ **Make DoD the smartest buyer of best goods & services to meet warfighter needs at best value over life of product**
  - **New laws and policies**
  - **Separate mandatory/discretionary practices**
  - **Simplify acquisition policy documents**
  - **Integrate policies & procedures for weapon systems and information systems**
- ◆ **Shift from “oversight” to “insight”**



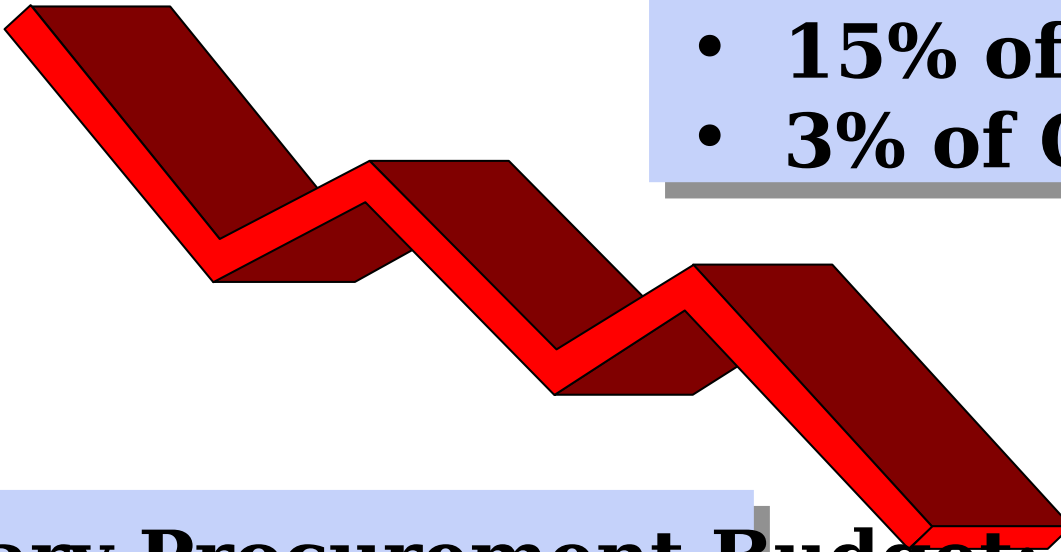
## 1961 Pentagon Spending:

- 40% of Federal Budget
- 8% of GDP

## 1997 Pentagon Spending:

- 15% of Federal Budget
- 3% of GDP

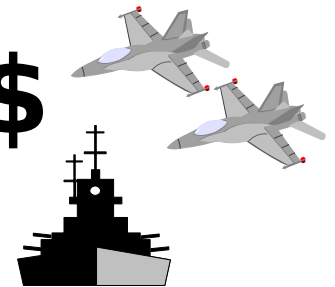
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## Military Procurement Budget:

- Down 67% since 1985 peak
- \$60 Billion goal

\$



# DoD Responses

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- ◆ **Acquisition Reform**
- ◆ **“The Last Supper”**
  - 1993 DepSecDef dinner
  - Fewer, larger companies
- ◆ **Followed previous OSD-led management initiatives**
  - Better integrate cost, schedule, technical perf. using Earned Value
  - Ongoing since 1980s



Lockheed  
GD Mil. Jets  
Sanders Assoc.



Lockheed

Martin Marietta  
GD Rockets  
GE Aerospace



Martin Marietta

Loral  
Unisys Defense  
IBM Fed. Systems  
LTV Missiles  
Ford Aerospace  
Goodyear



Loral

Aerospace

Northrop  
LTV Aircraft  
Grumman



Northrop Grumman

Westinghouse Def

Boeing  
Rockwell Def &  
Space



Boeing

Rockwell Def & Space  
McDonnell Douglas

Raytheon

McDonnell  
Douglas

Raytheon  
E-Systems

Texas Instruments  
Def



Texas Instruments Def

Hughes Aircraft

Hughes Aircraft

# *The 1990's - Shrinking Industrial Base*



Lockheed  
Martin

Northrop Grumman



Boeing



Raytheon

# Effective Management\*

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**Contract:** 4 miles of railroad track in 4 weeks for \$4 million.

**Status:** After 3 weeks, only \$2 million has been spent.

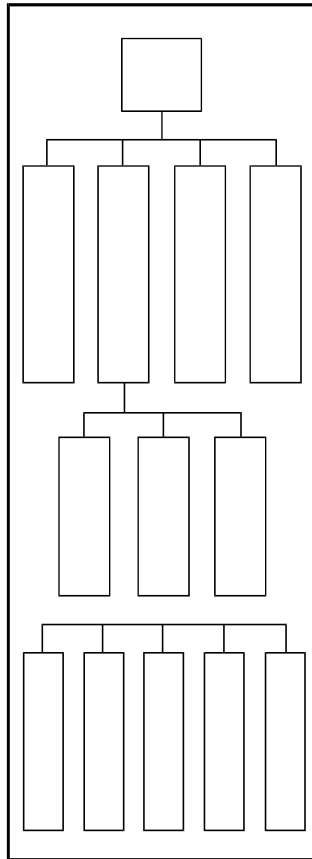
**Questions:** How much have you planned to spend? How much have you earned? How much have you known?

- |                        |                                   |
|------------------------|-----------------------------------|
| - Planned \$1M/week    | - Planned \$1M/week               |
| - Planned \$3M to date | - Planned \$3M to date            |
| - Actual cost \$2M     | - <b>Earned \$1M</b> (66% behind) |
| - \$1M favorable???    | - Actual \$2M (100% overrun)      |

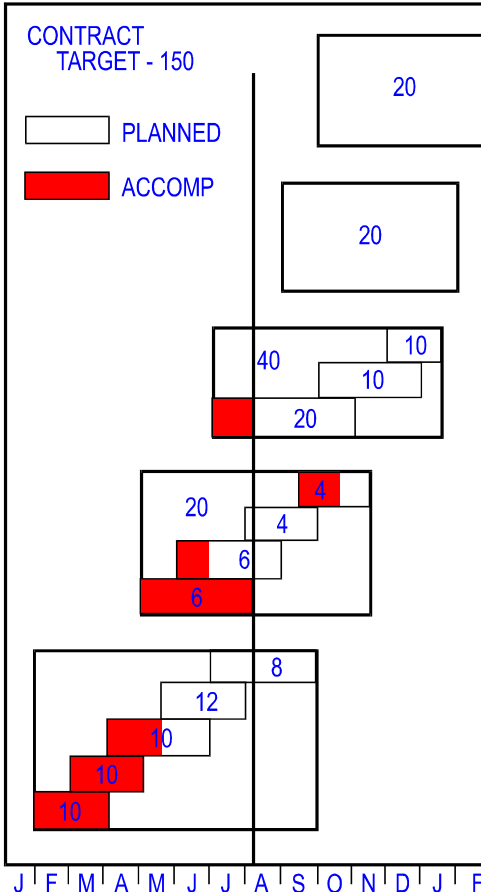
**\* Source: May 1997 General Accounting Office Report**

# Earned Value Management =

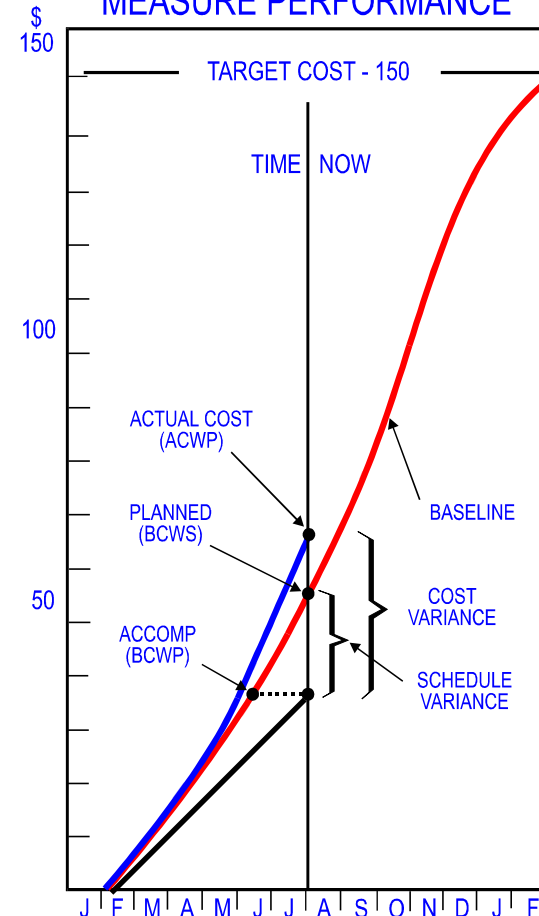
## DEFINE THE WORK



## SCHEDULE AND BUDGET



## MEASURE PERFORMANCE





# Lesson of the A-12 (& others)

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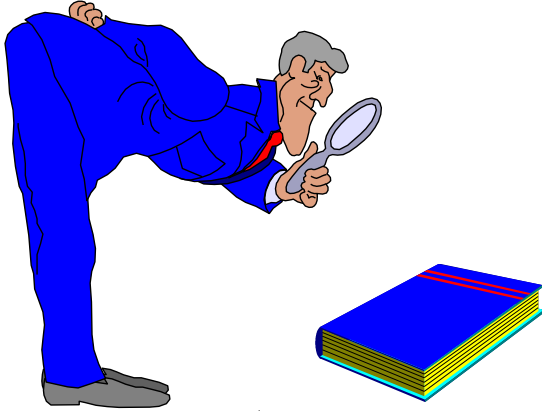
The “Beach” Report, A-12 Administrative Inquiry,  
28 Nov 1990

◆ Too often, earned value insights remain the sole province of the supporting program control staff of both contractors and the government.

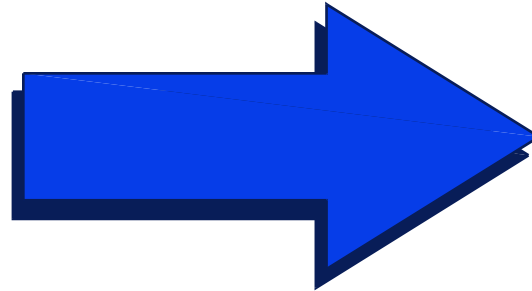
- Earned value must be an **integral** part of the performing design and manufacturing organizations
- Only when **program technical staffs** are held accountable for earned value analysis, will they begin to understand its implications

# Reengineering EVMS

## October 1993 - A Vision



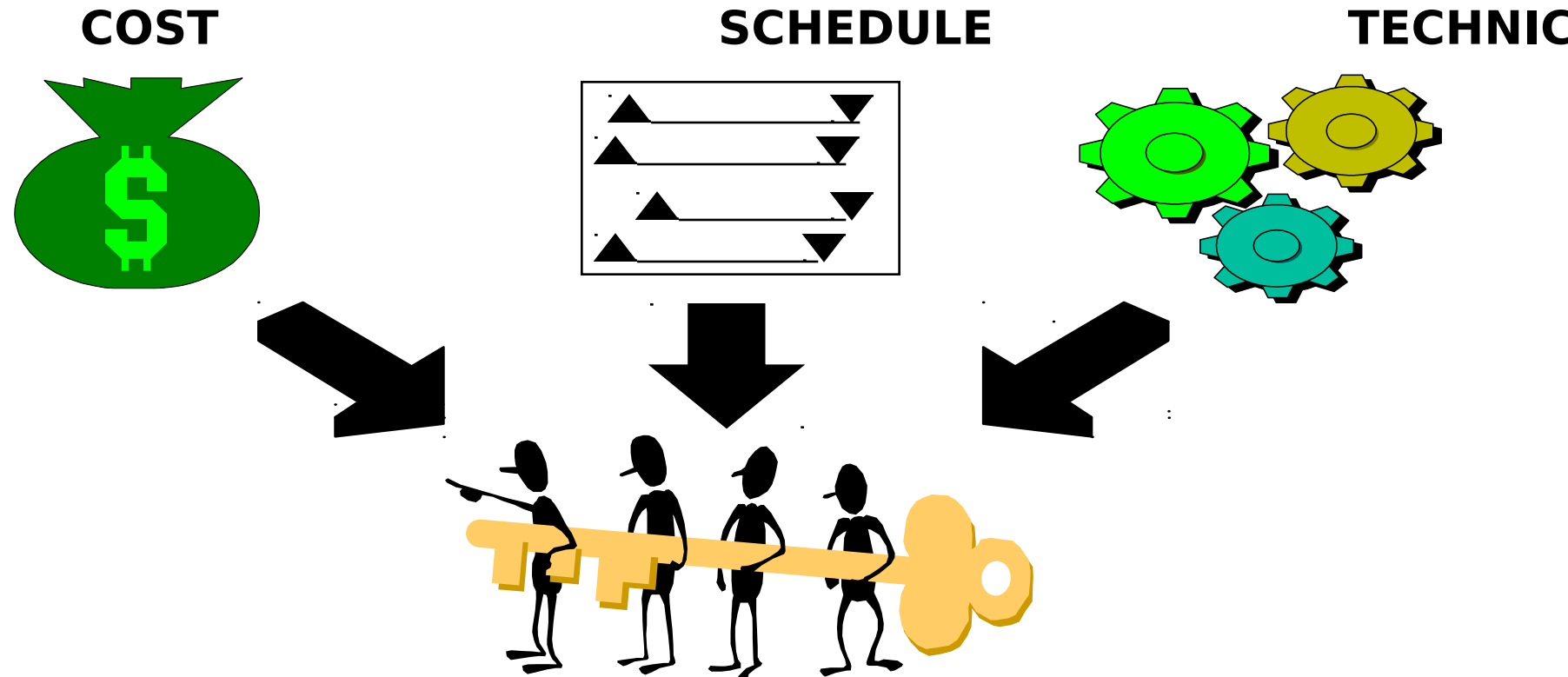
**Inspection**



**Management**



# **Integrated Product Teams:** **The Key to Success**



**Management systems don't manage - people do!**  
**EVM is used to identify, communicate and *manage***  
**the resource effect of technical and schedule problems.**

# The Really Nice Thing About

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**Not Planning**

Failure comes as a  
complete surprise and is  
not preceded by long  
periods of worry and  
depression!\*



**\*Micro Planning International**

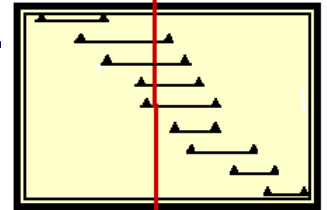
# Work Breakdown Structure:

## The Key to Integration

MIL-HDBK-881

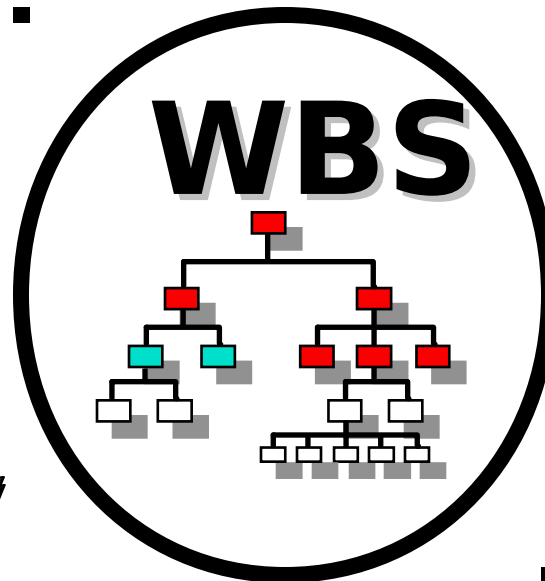
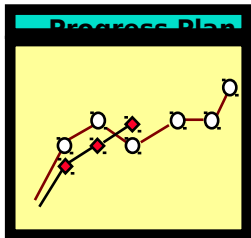


**COST**

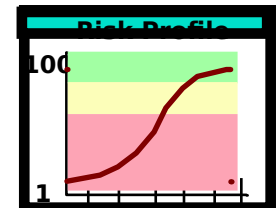


**SCHEDULE**

**TECHNICAL  
PERFORMANCE**



**RISK**



# Reengineering EVM: DoD Improvements

- ◆ **Redefined Earned Value Ownership**
  - Financial reporting to management
  - Government to industry
  - PMs “assume” data integrity
- ◆ **Better management tools**
- ◆ **Integrated Baseline Reviews**
  - Improved planning process
  - Better technical/risk management
- ◆ **Revised DoD 5000.2-R**
  - Defense Acquisition Deskbook



# Reengineering EVM: ~~Integrated Baseline~~ Reviews

- ◆ Within 6 months of award
- ◆ Mutually understand plan
  - Scope
  - Schedule
  - Resources
- ◆ Planning process vs. event
- ◆ PM leads
  - EVM staff supports
  - Management system reviews effectively eliminated

IBR Training

- Schedules
- Mgmt. Systems



# **Growing Consensus: Gov't/Industry Best Practice**

- ◆ **Dec. '96 DoD accepted industry EVMS guidelines as C/SCSC replacement**
- ◆ **Reserved right for government review**
  - **As determined by project manager**
  - **“Self-certification” not in public interest**
- ◆ **Encouraged “true” standard**
  - **ANSI/EIA 748-98 Earned Value Management Systems**
  - **For now, DoD and industry EVMS criteria are equal**
  - **International discussions ongoing**



**Canada, UK**



# Keynote Themes

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- ◆ **Industry**

- EVM does not cost
- Pays “big time”
- Improves bottom line
- Customer satisfaction
- More bang for buck

- ◆ **Government**

- Perceptions
- Martyrs,  
Missionaries,  
Messengers



# Roadmap from Requirements to Competitive Advantage

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## ◆ Challenges:

- Cost-effective government requirements
  - International cooperation
  - Commercial environment efficiently eliminates non value-added practices.
- ◆ Exam question:
- Can EVMS respond?

# **Industry's Vision**

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- ◆ **National Defense Industrial Association Management Systems Subcommittee**
- ◆ **Move the community from a requirements structure to one based on competitive advantage**
- ◆ **Yogi Berra: “When you arrive at a fork in the road, take it.”**

# Roadmap - Requirements to Competitive Advantage

## Industry

- **Grow business (new contracts)**
- **Achieve customer expectations (contract performance)**
- **Achieve stockholder expectations (improve financial results)**

## Government

- **Reduce project costs**
- **Reduce schedule risk**
- **Program Success: improve predictability**

# Roadmap -

## Requirements to

**Common Business Processes give the Program Manager the tools to avoid reinventing the wheel for each program.**

- ♦ **EV is a tool integrating technical, schedule and cost performance measurement and analysis data for management.**
- ♦ **Cost savings and competitive advantage come from a broad business application.**

***Program by program application isn't good***

# Roadmap from Requirements to *Government* Competitive Advantage

IBRs

32 EVMS Criteria

Regulations Revised

Contractor Project  
Management Practices

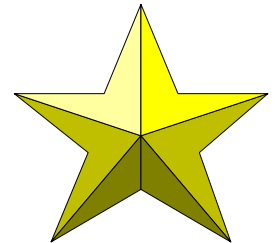
ANSI-EIA 748

Advance Agreements

IBRs

*Industry*

- Incorporate ANSI-EIA 748
- DoD Regulation



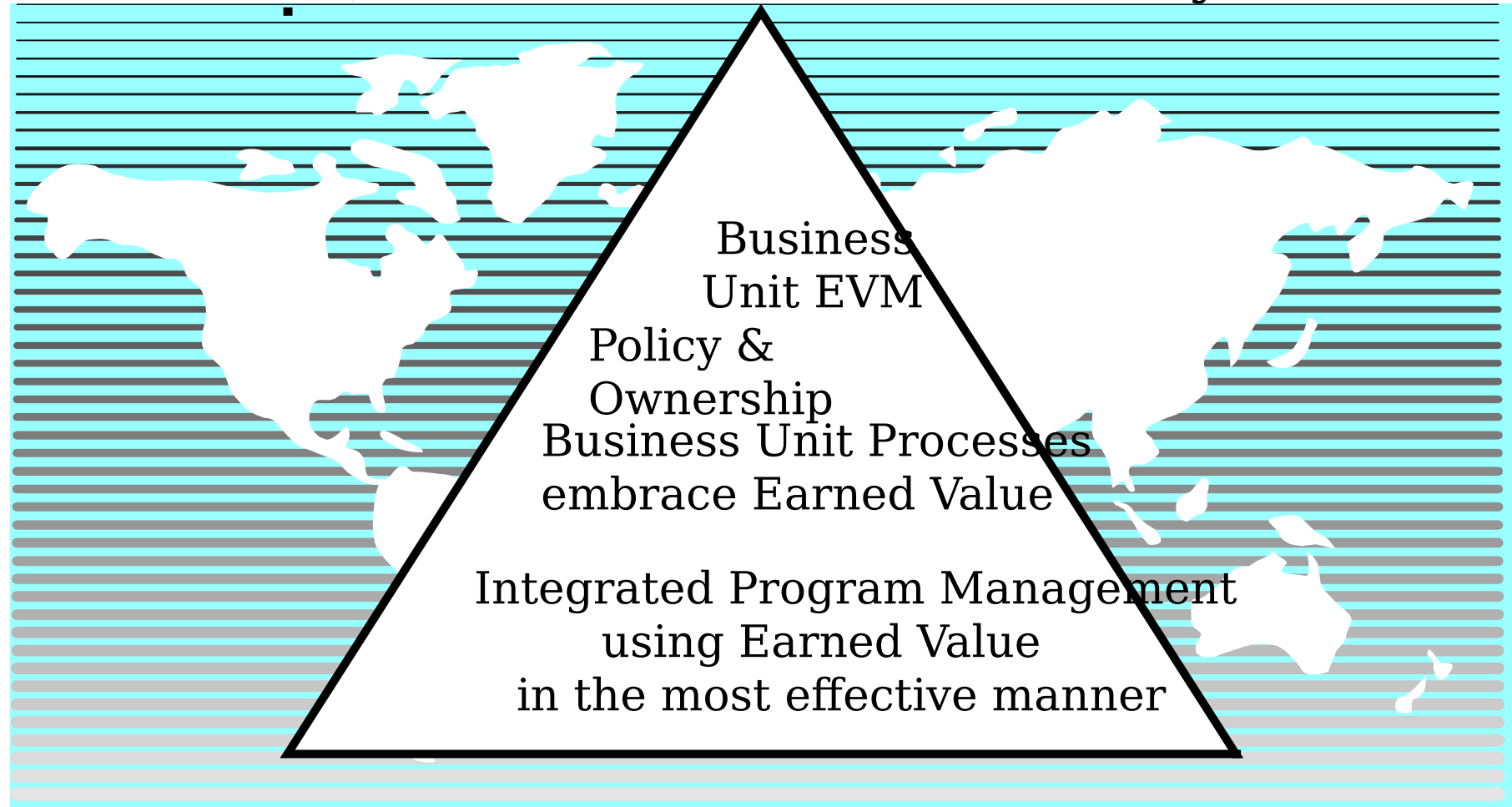
- Business Unit Policy & Procedures
- Embrace EVMS (Ownership)
- International recognition
- EVMS Guidelines

**ROADMAP FROM REQUIREMENTS**



**TO COMPETITIVE ADVANTAGE**

## **Integrated Program Management Competitive (ALL non-value added activity eliminated)**



# **Sustaining the Progress**

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- ♦ **Public/Private cooperation**
  - **Expand contact with commercial firms**
  - **Eliminate unessential differences between government and commercial management practices**
  - **Civil-Military Integration**
- ♦ **Global Standards (or guidelines)**
  - **Work with industrial partners-**
  - **While encouraging wider dialogue**



# **Sustaining the Progress (cont'd)**

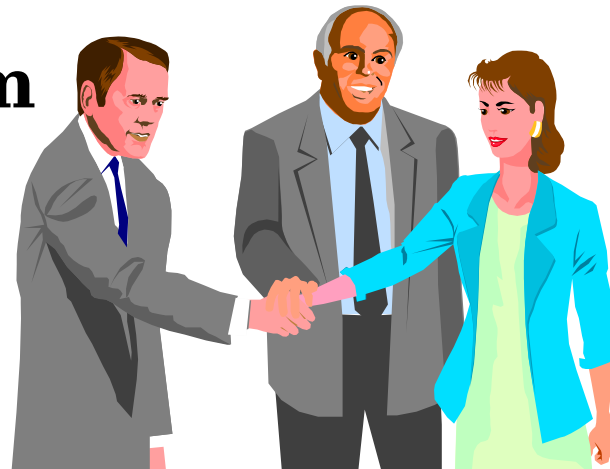
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- ♦ **Project Management Education**
  - **Alternative delivery**
    - » **Distance learning**
    - » **Alternate sources**
- ♦ **Integrated Project Management**
  - **Technical Performance Management**  
 **$IPT + IBR + EVM = IPM$**
- ♦ **In-house management**
  - **November 1998 conference**

# **Sustaining the Progress (cont'd)**

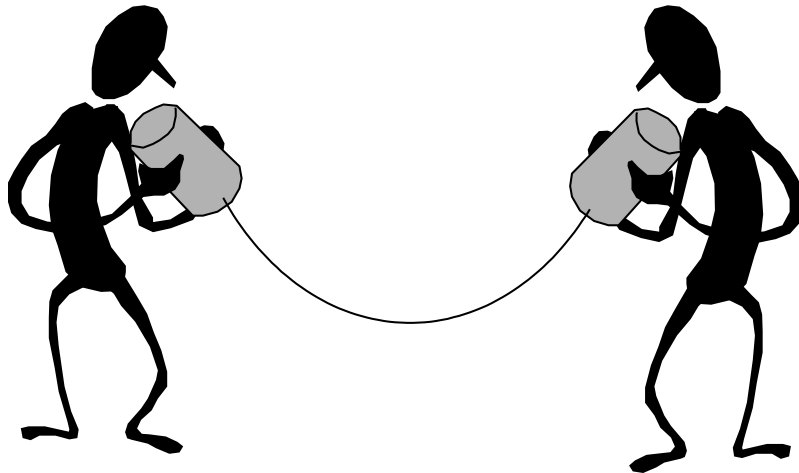
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- ♦ **Interagency cooperation**
  - **Office of Management and Budget**
  - **“One government” approach**
- ♦ **Associations are valued partners**
  - **American Project Management Forum**
  - **Global Forum**
  - **Standards**
  - **Education**
  - **PMA/PMI**



# Sustaining the Progress (cont'd)

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- ◆ **“Clearinghouse”**
  - **Trust & Communication**
  - **OSD to DCMC**
  - **Mr. Richard Zell**  
**(703) 767-3469**  
**richard\_zell@hq.dla.mil**
- ◆ **Cloud Kingdom**
  - **At your service**  
**(703) 695-5166**  
**abbawf@acq.osd.mil**

# **WAR (wInsight Analysis & Review) Room**

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- ◆ **8 Screens**

- WBS
- Product Photo
- Schedule status
- Schedule perf. trend
- Risk + (Monte Carlo)
- Cost perf. trend
- Est. at complete
- Funding status



- ◆ **Compare programs**

- Update in real time
- Link performance to budget decisions

- ◆ **Natl. Reconnaissance Office**

- Near Dulles Airport
- Visits can be arranged
- Demo at Tysons conf.

**World Class Best Practice in Partnership w**

# Using Variance Information

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## ◆ **Schedule Variance**

- **BCWS tied to early start/finish**
  - » **Late with float**
  - » **“Real” problem**
  - » **Deliberately delayed**
  - » **Work done; no BCWP**
  - » **Early**
  - » **Anomalies**

## ◆ **Cost Variance**

- **Negative**
- **Positive**
- **Anomalies**

# Negotiating Contract Changes

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- ◆ **Value of completed work**
- ◆ **Value of work in process**
- ◆ **Value of work deleted (yet to be done)**
- ◆ **ACWP Cum**
- ◆ **BCWP Cum**
- ◆ **ACWP Cum (+ ETC)**
- ◆ **Baseline Budget**